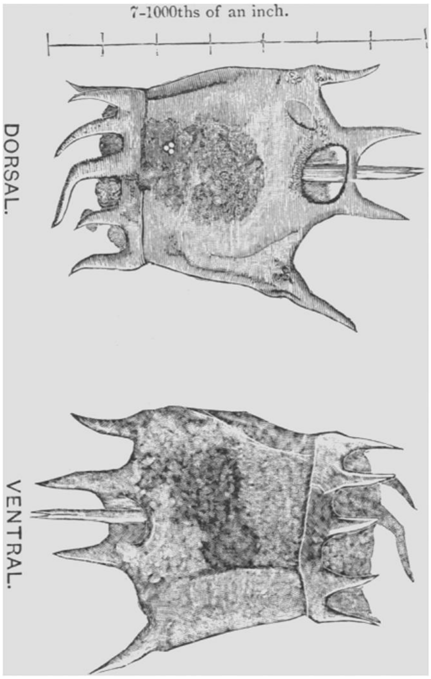
A NEW ROTIFER.

In a filtering of Hemlock lake water (Rochester's water supply) made in August of last year, I noticed a rotifer that at once struck me as different from any that I had before observed or seen described. On classification it proved to be a Brachionus, and a diligent search through the somewhat scattered literature on the subject has since failed to satisfy me that this form has ever been described.



BRACHIONOUS CONIUM.

The Micrographic Dictionary uses the classification of Ehrenberg, while Carpenter in his work, " The Microscope and its Revelations," adopts that of Dujardin. While all classifications of the Rotatoria thus far made are in some ways unsatisfactory, that of Ehrenberg seems the least faulty, and according to it I find that this organism, by reason of having its rotary disk divided into two parts (*Zygotrocha*) and having a carapace, would show that it belongs to the family "*Brachionœa.*" There are five genera in this family. The Brachionus has one eye-spot and forked foot, and to this genus the rotifer unquestionbly belongs: "*Brachionus Conium.*"

Lorica irregularly truncate, slightly reticulated over entire surface except the collar carrying frontal spines; this latter portion has a hard vitreous appearance.

Ten frontal spines, the middle one on the dorsal surface longer than the balance and describing almost a right angle turn near its center to one side. This spine half as long as the carapace of the rotifer. Eye-spot prominent. No openings on dorsal surface of carapace.

Four posterior spines, one at either extreme side and one on either side of anal opening. Tail or foot, slender and bifid. Extreme length of rotifer including anterior and posterior spines, seven one-thousandths (7-1000ths) of an inch.

Unfortunately a dead specimen had to be used for the drawing, hence no definite description can be given of mouth parts for internal structure. The external appearance is, however, so strikingly characteristic as to serve all purposes of identification until the internal structure can be fully described. H. F. ATWOOD.

MICROSCOPICAL NOTES.

The subject of standard screw gauges was recently brought before the R. M. S., and the question of the accuracy of 50 duplicates, made for distribution, was discussed. Mr. Bevington considered " they were as near the standard as could be expected." Mr. Beck pronounced them on trial to be defective. It seemed to be conceded that the original "taps and dies" had been lost, but as Mr. Crouch thought that the present set of duplicates was sufficiently perfect for all practical purposes, we suppose opticians must rest and be thankful for what they can obtain. Considering the deterioration, which must occur from the wear and tear of the cutter, it is to be regretted that perfect accuracy cannot be given to the standard gauges issued by this society.

On the presentation of a paper by Mr. Shrubsole on the "*Diatoms of the London Clay,*" the President, Professor Martin Duncan, made the following interesting statement on the subject. He said that "those who studied this class of subjects would be greatly interested in the paper which had been brought before them; and no doubt had it been read before the Geological Society, there would have been considerable discussion upon it. The London clay had at the bottom of it large beds of pebbles; these were all water-worn, and clearly indicated an old shore. Just above this, on a sinking shore like it, would be precisely where they should ex-expect to find diatoms. But the London clay just above this became a little more marine, and this fact would acccunt for their not finding these fresh-water forms there also. Then it should be remembered that the occurrence of diatoms was subject to great variations, and that they were always found in greatest abundance in the neighborhood of silicious rocks. As regarded their age, he thought there could be no doubt that they lived at the time of the Lower Eocene. There were, however, some peculiarities about the London clay, there being no other strata which were deposited under the same conditions, because it was not a reef deposit, but it positively told the story of an open estuary leading down to a very large river. This was one reason why they would not find the diatoms in similar deposits in Italy or Wales. It was not an uncommon thing to find that in other fossils the carbonate of lime was replaced by sulphide of iron. Phosphate of lime was often also replaced by sulphide of iron, and the interstices of other fossils were often found filled with the same substance, which was an exceedingly common mineral in the London clay. Silica was not the difficultly-soluble substance which it was formerly thought to be, so that its place could be as easily filled up by any other mineral which was less soluble than itself—from which consideration he thought the matter might be explained. But when they came to the question of antiquity, it was not so easy to give an opinion as to whether Count Castracane's diatoms in the Carboniferous series were with good reason thought to be diatoms. In the Tertiary of course they found them; but if Count Castracane's propositions hold good, we ought to be sure to find them in the intermediate series."

Mr. Shrubsole said Mr. Kitton's idea was that they were fresh water diatoms which had been washed down into the coal-beds.

The President expressed himself unable to accept such a suggestion.

LAST week the Whittaker Court Marshal was continued, and Dr. Piper of Chicago, was examined as an expert on Microscopy. In cross-examination questions were submitted to the witness on the construction of the Microscope, which Dr. Piper admitted were beyond his knowledge. One question related to the composition of the glass used for the construction of lenses for the Microscope.

Possibly few Microscopical experts could answer

questions on this point, and we would be obliged if any of our correspondents would furnish a few facts. We understand that some makers make use of a very soft glass, the surface of which becomes defaced in a short time: a dealer calls this "*spongy glass*." We would like to know where the respective makers purchase glass for objectives, and its composition.

ASTRONOMY.

COMET (*b*) 1881.

Prof. Barnard, of Nashville, Tenn., announces the discovery of a comet on the morning of May 12, 1881, in R. A. $22^h\ 59^m\ 18^s$, dec. + $14^\circ\ 24'\ 30''$. An observation on the following day gave R. A. $22^h\ 58^m\ 52^s$, dec. + $14^\circ\ 36'\ 0''$, thus indicating a motion 24^s in R. A., and $11''$ in Dec. The comet is reported as very faint.

ON THE USE OF THE ELECTRIC TELEGRAPH DURING TOTAL SOLAR ECLIPSES.*

If we suppose a single observer to be prepared for the observation of all the total solar eclipses of a century, we shall find that the entire amount of time during which he may contemplate the totally eclipsed sun will not differ much from an hour. We may be sure then of the expediency of any scheme whereby the rare moments of these eclipses may be utilized to their utmost extent. If such scheme is devised, two important results are likely to follow.

(1.) Economy of the sum-total of energy in any particular line of solar research.

(2.) A consequent enlargement of the means of research in other directions.

The general conception of the scheme proposed in this paper may be very briefly stated: Suppose a station to the east and a station to the west on the line of any total eclipse, as widely separated as practicable, and equipped for similar observations of discovery during the progress of the eclipse; the method proposes the electro-telegraphic transmission of important observations made at the western station to observers at the eastern station, with due speed for their verification or rejection when the lunar shadow reaches the latter station.

For illustration, consider the next total eclipse,—that of 1882, May 16. In detail, the particular advantages in connection with this eclipse seem to be about these:

(1.) The path of totality is almost exclusively on land. Central eclipse begins in West Africa; the line of totality passes to the north-east, crossing Upper Egypt and the Nile at El-Akhmym; thence over the Red Sea, crossing the Tigris a few miles to the south of Bagdad; then passing a little to the south of Teheran, it traverses Central Asia, and leaves the Asiatic Continent somewhat to the north of Shanghai.

(2.) Though not generally through the inhabited regions of the globe, the path of totality lies through several inhabited regions which are widely separate, viz: Egypt near the Nile, Central Persia and Eastern China.

(3.) These regions are inter-connected by telegraphic cables and land-lines.

Now, we will suppose that an important observation of discovery is made at El-Akhmym,—an observation of an intra-mercurial planet for example. Between 40 and 45 minutes of absolute time elapse before totality comes on at Teheran. During this interval the observer at El-Akhmym will have an abundance of time for transcribing the apparent magnitude and the precise position of the new body, and transmitting the same to his fellow-observer at Teheran several minutes before the lunar shadow reaches him. The latter observer will then have leisure to proceed with the setting of his circles, the verification of their readings, and the pointing of his instrument to the precise part of the heavens indicated. He may then be able to see the suspected object before the eclipse becomes total. He may also decide upon a neighboring star for comparison with the planet, and thus obtain a very accurate determination of its position. The observer at Teheran should also be prepared for an independent search for the suspected planet, in the event of receiving a negative message from the observer at El-Akhmym.

The observation at El-Akhmym should also be transmitted to Shanghai, (reached by the shadow more than two hours after totality at Teheran), for independent verification at that point. We might thus observe the result of nearly three hours' motion of the planet,—which we might reasonably expect to give important data in regard to its orbit about the sun. Of course, the result of observation at Teheran would also be transmitted to the observer at Shanghai.

It was my intention primarily to have considered the total eclipse of 1882 merely as an illustration of the method proposed. Further investigation, however, seems to show that it is at least one of the two most favorable eclipses during the present decade, if not during the present century.

WASHINGTON, *May* 18, 1881. W. C. W.

*Abstract of a paper by D. P. Todd, M. A., presented before the American Academy of Arts and Sciences, Jan. 12, 1881.

COMET (*b*), 1881, BARNARD.

To the Editor of "SCIENCE:"

On the morning of the 12th, while sweeping the eastern sky in search of comets, at about three o'clock, an object entered the field of my telescope which I strongly suspected was a comet, as I did not know of any nebula near its place. I at once secured its position relative to *α Pegasi*, it being in the field with that star. Its position at seven minutes past three o'clock was:

$$\text{R. A. } 22^h\ 59^m\ 18^s$$
$$\text{Decl. } + 14^\circ\ 24'\ 29''$$

The object was watched at intervals until about four o'clock, when daylight prevented further observation. During this time no motion was detected. Wishing to confirm the discovery by a second observation, before announcing it, I waited until the following morning, when upon turning my telescope to the point where the object was seen, I found it had disappeared.

No doubt now remained in my mind of its cometary character. I began a search to re-discover it. After sweeping for some time in the immediate neighborhood, I found it again as day-light was whitening the sky. It was very close north following *α Pegasi*. The object was then only visible when the bright star was obscured by a part of the ring suspended in my eye-piece. It followed the star by six seconds and was therefore in R. A. $22^h\ 58^m\ 52^s$. I estimated the difference of declination between comet and star, and found it to be in north declination $14^\circ\ 36'$. No doubt now remaining that it was a comet I telegraphed its position to Professor Swift, Director of the Warner Observatory at Rochester. On the morning of the 14th I again began a search as soon as the object had risen above the horizon, but it could not be found. At first I attributed my not finding it to its low altitude and the bright moonlight. The search was continued until daylight, and I was deeply mortified at not finding any trace of the object. In the morning telegrams from Rochester and Boston announced failure to find it at those places.

A short search this morning, when the sky had cleared, at about day-light, resulted no better than yesterday morning. The object on the 12th was slightly smaller than Swift's last comet, which I had been observing on the 11th, and was probably a little brighter. On the 13th it